DOCUMENT RESUME

ED 463 723 IR 021 142

AUTHOR	Prestera, Gustavo E.; Moller, Leslie A.
TITLE	Facilitating Asynchronous Distance Learning: Exploiting Opportunities for Knowledge Building in Asynchronous Distance Learning Environments.
PUB DATE	2001-04-00
NOTE	16p.; In: Proceedings of the Annual Mid-South Instructional Technology Conference (6th, Murfreesboro, TN, April 8-10, 2001); see IR 021 138. Reference list contains small print.
AVAILABLE FROM	For full text: http://www.mtsu.edu/~itconf/proceed01/3.pdf.
PUB TYPE	Information Analyses (070) -- Speeches/Meeting Papers (150)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Computer Mediated Communication; Computer Uses in Education; *Cooperative Learning; *Distance Education; Higher Education; *Instructional Design; Teacher Competencies; *Teacher Role; Teaching Methods
IDENTIFIERS	*Facilitators; Learning Communities; *Learning Environments

ABSTRACT

Computer mediated communication tools enable today's distance learners to engage in collaborative problem solving, threaded discussions, and peer tutoring through asynchronous distance learning environments. This paper suggests that these are best accomplished by establishing virtual learning communities, which break down traditional instructor-as-transmitter, learner-as-receiver roles and instead promote a more learner driven environment. In virtual learning communities, members share mutual responsibility for each other's learning. Instructional strategies for facilitating online distance learning are identified and discussed, including: instilling ownership through individualized content, projects, and assessments; making meaningful connections through goal-based exploration of content; collaborating through learning communities; encouraging reflection through moderated discussions; and representing complex knowledge structures through concept mapping. These strategies call for instructors to play a more facilitative role in the learning environment. Five facilitator roles are discussed: that of a guide, mentor, catalyst, coach, feedback-giver, and resource provider. These roles give rise to several new competency requirements for online instructors. (Contains 46 references and 4 figures.) (Author/MES)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 463 723

Facilitating asynchronous distance learning
Exploiting Opportunities for Knowledge Building in Asynchronous Distance Learning Environments

Mid-South Instructional Technology Conference
Middle Tennessee State University
April 8 - 10, 2001

U.S. DEPARTMENT OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

L. Lea

Gustavo E. Prestera & Leslie A. Moller
Penn State University
Instructional Systems Program
University Park, Pennsylvania

Email: GusP@Mentergy.com, lxm31@psu.edu

Abstract

Computer mediated communication tools enable today's distance learners to engage in collaborative problem-solving, threaded discussions, and peer tutoring through asynchronous distance learning environments. The authors suggest that these are best accomplished by establishing virtual learning communities, which break down traditional instructor-as-transmitter, learner-as-receiver roles and instead promote a more learner-driven environment. In virtual learning communities, members share mutual responsibility for each other's learning. So what implications are raised for the instructor/designer of virtual learning communities? Instructional strategies for facilitating online distance learning are identified and discussed. These include: instilling ownership through individualized content, projects, and assessments; making meaningful connections through goal-based exploration of content; collaborating through learning communities; encouraging reflection through moderated discussions; and representing complex knowledge structures through concept mapping. These strategies call for instructors to play a more facilitative role in the learning environment. Five facilitator roles are discussed: that of a guide, mentor, catalyst, coach, feedback-giver, and resource-provider. These roles give rise to several new competency requirements for online instructors.

Exploiting Opportunities for Knowledge Building in Asynchronous Distance Learning Environments

Distance learning began with one-to-one student-teacher relationships, whereby learners engaged content in isolation (e.g. through correspondence courses). Later, with the introduction of audio and video conferencing technologies, this relationship became one to many and feelings of isolation were reduced. Today's computer-mediated communication tools are used to create rich learning environments where many-to-many relationships can flourish. At the same time that technological advancements are improving our capacity to deliver instruction at a distance, two forces are reshaping

IR021142

BEST COPY AVAILABLE

education and workplace learning: the reexamination of what learning means and the willingness to reconsider instructional formats.

Redefining learning

Foshay and Moller (in press) define learning, from a constructivist viewpoint, as a process that prepares learners to create knowledge and solve ill-structured problems through transformative or generative processes (p. 6). Ill-structured problems are native to a particular context, involve tasks that are non-routine, and often lack a singular answer. At the heart of the learning process is an emphasis on critical thinking, creativity, collaboration, dialogue, and argumentation directed at solving those problems and providing continuous learning opportunities (Preskill & Torres, 2000). This differs from traditional viewpoints in that it places the learner, not the instructor, at the center of instruction and defines learning as a process rather than a product of instruction.

Redefining instruction

While many educational policies and systems, originally created during the industrial age, are successful in managing the educational process; they are not designed to support natural human learning abilities (Marshall, 1997). In order to support learning as a knowledge building process, learning environments need to allow for context, collaboration, and practice to co-exist (Barab & Duffy, 2000). There is a need for learner-centered environments that enable students to analyze and share ideas as well as apply their knowledge in a real world context (Land & Hannafin, 2000).

This knowledge building approach is the basis for the strategies, roles, and competencies presented and has significant implications for both how people learn and how people work, more so as socio-economic conditions and other factors progressively blur the boundaries between learning and working.

Strategies for facilitating

Though much attention is given to technology's increasing role in distance learning, equal (if not greater) consideration should be given to the design and delivery strategies used to implement instructional technology. Though technological advancements have enhanced and will continue to improve distance learning environments, and though the role of the instructor has changed dramatically, there has never been a greater need for high quality, facilitative leadership in the virtual classroom.

It is critical that online instructors use strategies that enable learners to contextualize problems, personalize meaning, and exercise choices. To obtain a level of learning that is consistent with knowledge building requires reflection, exploration, and collaboration, which foster learning that is intrinsically motivating. Knowles (1975) supports the use of these methods, suggesting that learners are motivated by internal incentives, such as self-esteem, achievement, personal growth, sense of accomplishment, and curiosity -- all by-products of collaborative problem-solving activities. Raising levels of intrinsic

motivation can improve satisfaction with the learning process and learner achievement levels (Cordova & Lepper, 1996). The level of interaction among online learners is influenced heavily by the structure of the course (Vrasidas & McIsaac, 1999), which is often driven by the strategies employed by the instructor. So what instructional strategies support a learning environment that intrinsically motivates learners? Several strategies have been identified and adapted to support knowledge building for online distance learning (see Figure 1).

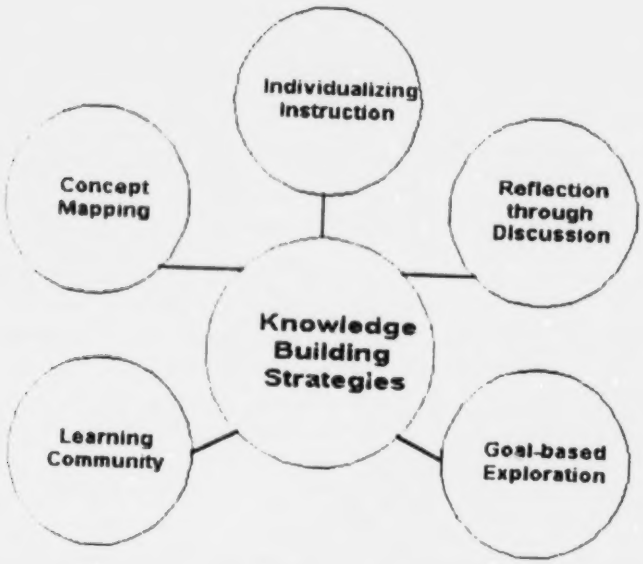

Figure 1: Knowledge building strategies for online distance learning

Individualizing instruction

One way of capturing and holding learner interest is by individualizing instruction, i.e., allowing participants to control the learning process and contextualize their learning experiences in a way that is meaningful to them (Sisco, 1997). When separated by time and space from learners, instructors no longer have the level of control over the learning environment that they enjoy in classroom settings. Online instructors are able to view chat room transcripts, emails, threaded discussions, and presentation spaces as means of monitoring outputs and have access to empirical tracking data, but they have little insight into what the learner is experiencing off-line. If for no other reason, this makes online instruction highly reliant on the learner's sense of self-accountability and self-organization.

Instructors and designers can build flexibility into their online courses in terms of how projects and assessments are structured and what content is explored by enabling learners to make important choices that shape their learning experience. By giving them responsibility and control, learners develop ownership of the process. Several researchers

have shown a correlation between ownership and learner satisfaction (Cole and Glass, 1977; Pine, 1980), which in turn leads to greater interaction with the learning environment and a higher sense of accountability. As Hootstein (1994) points out, making content interesting is less important than making learners interested.

In addition to individualizing the needs assessment and content portions of their courses, feedback systems should also be individualized. Often, peer evaluations are used to provide feedback on assignments. Unfortunately, peers may not always be thorough or candid enough in their assessments (Vrasidas & McIsaac, 1999). Therefore, it is important that instructors also play an active role in providing positive and constructive feedback that is timely and personalized. This will help prevent online learners from drifting away from the course because of feelings of disconnection.

Goal-based exploration

One school of thought suggests that learning experiences should be organized as task-oriented or problem-solving activities (Knowles, 1975; Jonassen, 1994). Blumenfeld, et al, (1991) submit that learners must perceive that projects are interesting and valuable. Too often projects are developed and disseminated without sufficient appreciation for the complex nature of the student motivation and knowledge required to engage in cognitively difficult work (Blumenfeld, et al, 1991; p. 373). Seifert (1997) suggests that the facilitator should help learners identify problems that are valuable to them, then structure content, resources, cases, and activities around the problem. This goal-based approach gives learners focus and ownership in their learning quest as well as a source of achievement and pride. In traditional classroom activities -- often due to time limitations, competing interests, and motivation within the class -- instructors sometimes reduce task difficulty, overlook errors, de-emphasize failed attempts, and ignore faulty performances (Clifford, 1990). In order to be motivating and to facilitate transfer of knowledge to real-life performance environments, problem-based activities should be worthy of the learner's time and effort, intellectually demanding, and most importantly contextual (i.e., full of the intricacies of reality). In other words, problems should be messy and draw upon multiple disciplines (Shank, 1996). If learners do not perceive the problem to be realistic or relevant, they will not be motivated to find a solution.

Collaboration through communities

According to social constructivists, learning is a social construct mediated by language via social interactions (Vygotsky, 1978), where collaboration among learners is a critical concept forming element (Jonassen, 1994). By establishing supportive learning communities, online instructors can harness the power of conversations. The learning community can provide social reinforcement and information exchange (Moller, 1998) as well as the opportunity to increase self-esteem and self-efficacy, which act as internal sources of motivation, and may improve satisfaction and achievement (McIsaac & Gunawardena, 1996). In fact, a study of several hundred undergraduate online students by Navarro and Shoemaker (2000) confirms that learner-to-learner interactions have a higher correlation ($p=.24$) to performance than learner-to-instructor interactions ($p=.10$).

Collaboration can be encouraged through the use of threaded discussions, debates, team-based problem solving simulations, group reports, brainstorming sessions, and peer coaching (Harris, 1999).

In a survey of an online graduate course, a significant number of students reported high levels of satisfaction (70%) and that collaborative work reduced their tendency to procrastinate (60%) (Kitchen & McDougall, 1998). On the other hand, online students also indicated frustration with the inherent time delays and subsequent time pressures involved with asynchronous team-based project work. To facilitate team building, project planning, and task coordinating, learners could supplement their asynchronous modes of communication with synchronous ones (e.g., chat rooms, face-to-face meetings, and audio or video conference). In situations where class members do not have access to synchronous communication tools, learners can agree on times and synchronize their use of email, bulletin boards, etc. to approximate synchronous exchanges.

Another collaboration tool available to online learning communities revolves around the idea of virtual presentation spaces. Typically referred to as computer-supported intentional learning environments (CSILEs), learners have access to a common online database into which text, schematics, charts, etc. are uploaded and made available for viewing and contribution (Jonassen, et al, 1995). Here learners can share their ideas, results, project outputs, etc. with team members, the instructor, or the class-at-large. Yet another tool, computer-supported collaborative work (CSCW), enables group members to view, make decisions about, and edit shared files. This can be a particularly valuable tool for developing high performance teams in the workplace, which more and more consist of geographically dispersed members working independently within one or more goal-oriented teams.

These computer-mediated communication tools, together with well-designed course structures and proper execution by the instructor, enable members of online communities to support each other, learn from one another, socialize, and collaborate. From a constructivist viewpoint, these functions are critically inter-related. It is easy, however, to understand why an instructor may assume that the unseen asynchronous distance learner, acting independently in an individualized environment, is self-motivated and in no need of community support. Furthermore, it is understandable that some instructors depersonalize their asynchronous distance learners in the absence of traditional classroom relationships. However, those attitudes deter learning achievement. The learner, although separated by time or space from others, still needs to feel a sense of belonging to a community and to benefit from such support and collaboration (Moller, 1998; Cairncross, 1997; McIsaac & Gunawardena, 1996; Moore & Kearsley, 1996; Kember, Murphy, Siaw, & Yuen, 1991). An instructor who actively plays a facilitating role and employs strategies that encourage high level thinking, reflection, and group interaction will maximize the effectiveness of online knowledge communities.

Reflection through discussion

Another strategy that instructors can use in knowledge building involves facilitating reflection through discussion. DeBard & Guidera (1999) suggest that the asynchronous nature of computer-mediated communication encourages more in-depth reflection and more meaningful discussion than is possible with face-to-face instruction. In classroom discussions, participants react and respond to one another in fast-paced exchanges of ideas that often end with neither side having the opportunity to reflect on those ideas, at least not until after the dust has settled. On the other hand, without time constraints, the asynchronous distance learner follows a more reflective process (see Figure 2).

1. Reads posted messages and supporting materials
2. Reflects and formulates a response
3. Possibly explores supporting resources (e.g., online experts)
4. Crafts a structured response
5. Edits, assesses, and possibly revises response upon reflection
6. Presents written response (maybe adding visuals and supporting links)
7. Receives the same type of consideration and feedback from peers

Figure 2: In an asynchronous discussion, the learner typically...

In a quantitative study of asynchronous online courses, Althaus (1997) reported that average responses in electronic discussions contained over one hundred words, while in-class responses averaged only about a dozen. In another study Sannomiya & Kawaguchi (1999) revealed that asynchronous, computer-mediated communication (as compared to face-to-face communication) tended to include less references to personal episodes; contained a lower proportion of ill-structured, disjointed sentences; and included significantly fewer number of repeated and unnecessary statements. In short, asynchronous communication can provide an excellent medium for reflection through discussion.

Bonk, Malikowski, Angeli, & East (1998) discuss a study involving an online learning community established for undergraduate Educational Psychology majors. Students were asked to create vignettes based on their earlier field (teaching) experiences, post their cases to a bulletin board, and respond to the cases of fellow students by means of online, threaded discussions. Twelve facilitators moderated the discourse. In a six-week period, 146 students posted 229 cases and 1,320 case-related responses (averaging 110 words per response). Though one may question the quality and thoughtfulness of the postings (justified opinions and claims were evident in only 9% of the responses), the sheer

volume of postings is indicative of the strategy's potential for generating active discussion.

Moderating active discussions

Discussions can be generated by posting thought-provoking questions to the class or by asking student-facilitators to initiate and moderate their own discussion groups. Berling (1999) suggests encouraging students to generate questions of their own, as part of an effort to teach students to become more like teachers. For example, a course site could have several online discussion forums organized around pre-determined topics. Each student-facilitator or moderating team is assigned a forum. The instructor scaffolds the process by providing guidance and supporting materials that offer information about roles and techniques. Students are responsible for generating interest in the discussion, laying down ground rules, moderating exchanges, and later synthesizing the ideas explored by the discussion group. In this way, the participants experience meaningful interaction that prompts reflection and thoughtful exchanges. The student-facilitators further benefit from both the moderating experience itself and the opportunity to distill the group's ideas, raising it to a higher level of organization (Cobb, 1999: p. 15).

Moderators can use active questioning techniques to prompt and encourage thoughtful discussion. Christensen (Discussion Teacher, 1991) offers a taxonomy of questions (see Figure 3), which can be used to raise the level of academic inquiry in discussion settings.

Diagnostic questions	(What is the cause of…?)
Prediction questions	(How do you predict these two chemicals will react?)
Hypothetical questions	(What would have happened if…?)
Action questions	(What steps should the company take?)
Questions of priority	(Given this situation, which is most critical?)
Questions of sequence	(Given these limited resources, what should be done first?)
Questions of extension	(What are the implications of your conclusion for…?)
Questions of generalization	(Based on your studies, what are the major elements…?)

Figure 3: Sample of probing questions from Christensen (1991: pp. 159-160)

Through the proper use of questioning techniques, discussion moderators can raise or lower the level of abstraction; redirect the discussion to fit a particularly need; drill down

into areas of interest; challenge assumptions and generalizations; and help participants consider the subject in new ways.

Concept mapping

Concept maps are cognitive tools, generally in the form of diagrams, which help learners visually and concretely depict their understanding of a particular knowledge set. They can depict strategic and tactical organization, relationships, hierarchy, sequence, and a host of other subtleties, enabling instructors and learners to communicate meaningful ideas on several levels at once. This rich medium offers instructors a way to assess various levels of development and understanding (Choi & Hannafin, 1995) and gives learners a powerful means to organize and communicate their ideas.

Concept maps can also be used to help learners think more strategically about what and how they learn. Consider this example. As Brandt (1997) noted, the amount of information which one has to wade through on the Internet vastly exceeds the amount of information required for a given need (p.112). This cognitive overload is often a source of anxiety for learners in web-enhanced courses. Grabowski, Koszalka, and McCarthy (1998) developed a handbook for use in a web-based graduate course. In it, the content (a myriad of links to web-enhanced instruction resources) is organized around an over-arching concept (the WELES model) and structured using a matrix approach. In this course, students are also asked to collaborate in developing their group's own unique concept map. As a result, learners are able to build on the instructor's basic framework, creating new concept models that are personally meaningful. Supporting the learner's strategic understanding of the content facilitates information processing and high order cognitive skills. Recognizing that many learners have difficulty with strategic thinking and that some may even find it challenging to represent their ideas visually, it is prudent to scaffold these concept-mapping activities with multiple supporting examples and to involve at least some element of group collaboration.

The roles of a facilitator

Instructors of online learning communities typically play multiple roles including that of designer, facilitator, administrator, and technical support (see Figure 4). Of these, the most visible and possibly the most important role is that of a facilitator. The facilitator role involves establishing, maintaining, and shaping the learning community. Six critical roles associated with facilitation have been identified, including that of a guide, mentor, catalyst, coach, feedback-giver, and resource-provider.

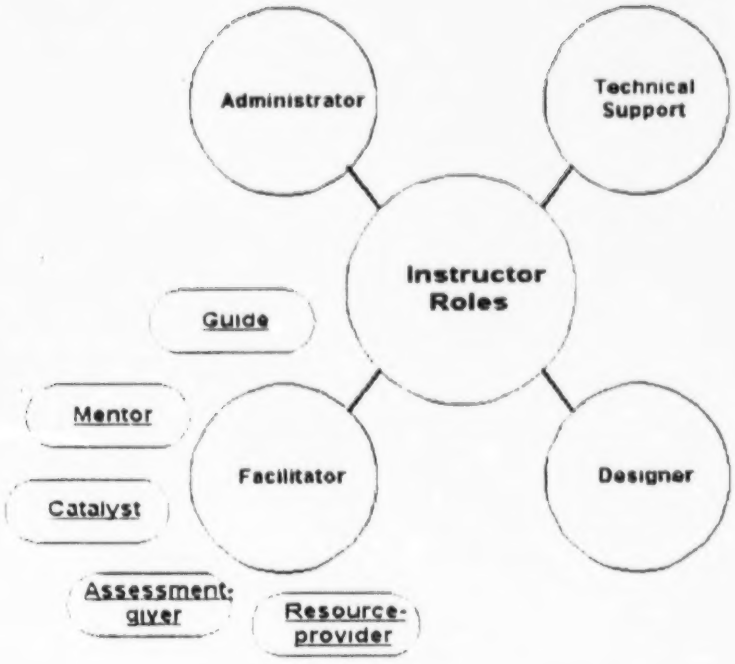

Figure 4. Roles of an Instructor working in an online distance learning environment

Instructor as a guide

Regardless of the medium, distance learning environments are generally foreign to new participants. Though many people today are familiar with email, for example, a learning environment that employs email and listservs as collaborative learning tools can, at first, seem awkward. A critical component of the facilitator's role, therefore, is to help participants become climatized to their new environment so that the technology becomes transparent (Berge, 1995). Online learners will need to familiarize themselves with technical issues (e.g., posting messages and uploading assignments); communications issues (e.g., feelings of isolation, uncertainty, and lack of confidence); social issues (e.g., expectations of learners being mutually responsible for each other's learning experience), and learning process issues (Bailey, 1998). This implies that the facilitator will need to take a leadership role early in the process, promoting a change of mindset. The facilitator must, for example, help learners break out of their stereotypical roles of information-receivers into roles of information seekers, explorers, and users. As learners become adjusted to the environment, the facilitator should encourage them to exert greater control over the process. The facilitator can then become less of a leader and more of a guide, while students transform from passive participants to active learners. Over time, even guidance and scaffolding should be gradually reduced, fading to the point that learners can function independently (Choi & Hannafin, 1995).

Instructor as a mentor

On the first day of class, by way of introducing herself, an instructor describes a recent failure then gives students in the class an opportunity to tell their own stories. Before long, students comfort each other and their instructor with the many lessons learned. This icebreaker and subsequent interactions set a tone of discussion, candor, and freedom from fear of embarrassment. Every classroom, live or virtual, has a particular culture of teaching and learning (Tishman, Perkins, & Jay, 1995: p. 1). An instructor can and should take the lead in establishing a productive culture by modeling positive norms, values, and behaviors. In doing so, the facilitator can establish a culture of risk-taking, collaboration, and self-criticism (Berling, 1999). This goes beyond merely enforcing rules of etiquette.

Instructor as a catalyst

A catalyst is something that causes activity between two or more people or forces... (Webster's, 1996: p. 231). Moore and Kearsley (1996) describe three ways that facilitators prompt meaningful interactions: learner-to-content (through exploration of learning resources); learner-to-instructor (through coaching and assessing); and learner-to-learner (through group interaction). This last type is of most interest to the authors as it represents a relatively new capacity of distance learning - to enable students that are separated by time and space to form an academic support community. Thanks in part to computer-mediated communications tools, students can interact, collaborate, and support each other's learning as previously could only be done in live classroom environments (Romiszoswki & Ravitz, 1997; Berge, 1995).

Instructor as a coach

A coach provides formative feedback that helps learners expand their mental models and grow their knowledge base beyond the superficial. This can include directing learner attention, reminding of overlooked steps, providing hints and feedback, challenging and structuring ways to do things, and providing additional tasks, problems, or problematic situations (Choi & Hannafin, 1995: p. 62). A good coach challenges learners by presenting new ideas, multiple perspectives, and underlying themes. In a learning community, coaching can and should be performed by all members. Still, even highly collaborative learning communities are sometimes prone to the stifling phenomenon of groupthink. For this reason, it is vital that facilitators work with individuals and groups -- moderating discussions, posing questions, and challenging assumptions -- in an effort to raise the level of academic inquiry. In describing the often conflicting roles of an effective discussion moderator, Christensen (Premises & Practices, 1991) said, The (instructor) is planner, host, moderator, devil's advocate, fellow-student, and judge (p. 16). Knowing when to wear which hat is the key to the art of facilitating.

Instructor as an assessment-giver

To the extent that the goal of an instructional program is to improve performance, it is important that learners be given an opportunity to showcase their newfound skills. Brooks & Brooks (1993) recommend that instructors work to remove traditional standardized testing in favor of assessments that are meaningful to learners. Traditional

standardized tests typically assess recall of factual data, rules, and procedures, sometimes also measuring comprehension. To assess higher level mental processes (e.g., problem solving, critical reasoning, decision making, etc.), however, assessments should be contextual and multi-disciplinary, both simulating real-life demands on the learner and challenging learners to synthesize content, contrast, compare, form value judgments, make decisions, and generate original thought.

Jonassen, Peck, and Wilson (in press: p. 3) suggest that the key to meaningful learning is ownership of the problem or learning goal. A critical question that instructors need to ask, therefore, is what situations arise in real-life contexts that would make challenging, engaging problems. These life-based challenges are often ill-structured, muddy if you will, yet they contain elements to which students can relate their prior experiences. A question that often arises with problem-based or case-based assignments is how to assess the quality of the learner's output, the solution. In asynchronous distance learning environments, evaluating a learner's process is as critical as considering the end product. After all, most post-assessments administered through asynchronous environments function as open-book tests. Therefore, the quality of the student's analytical dissection of the problem, the reasoning process, the ability to collaborate with peers, and the rationale that supports the findings should be of equal importance to, if not greater than, whether or not the solution offered is technically right or wrong.

Objective assessments (e.g., ones with multiple choice, true/false, and matching questions) can have a role in asynchronous distance learning environments. The authors suggest that these assessments be used for practice, self-assessment, and formative feedback. Navarro and Shoemaker (2000) suggest that electronic testing of important course content with instant feedback (p. 29) is important and, together with other factors, helps improve learner performance and satisfaction regardless of demographic factors, academic background, or computer skills.

Instructor as a resource-provider

In order to create a rich learning environment of exploration and growth, instructors must make available a wide assortment of learning resources. These resources represent the topsoil of learning. However, as Grabowski, Koszalka, and McCarthy (1998) point out, class materials quickly become out-of-date, inaccurate, or irrelevant to the day's lesson (p.2). The World Wide Web offers instructors a vast supply, often too vast, of current resources to use. Instructors should support learners by providing helpful search strategies and ways of reducing information overload. In addition, the use of today's communications tools (i.e., computer, audio, and video conferencing) can quickly put learners in contact with a large pool of expert resources. This access helps expand the learning community beyond the virtual walls of the classroom.

Competencies of a facilitator

Facilitating learners in asynchronous distance learning environments is highly challenging. The facilitator must be able to tap a wide variety of interpersonal helping

skills, such as empathy, respect, and genuineness (Brookfield, 1985, p. 7). Moore and Kearsley (1996) suggest that more experienced teachers may be better able to cope in this environment because they are better able to predict learner needs. This may be true to the extent that experienced instructors are willing and able to let go of long-held assumptions about learning environments. In a traditional classroom, for example, the learning community is built-in and feedback occurs naturally through the course of daily interaction. Whereas perhaps these can be taken for granted in a traditional classroom, they must be actively constructed in an asynchronous distance environment. Instructors unwilling or unable to assume this facilitative role, with the persistence required to overcome the technological and communicative challenges of online distance learning environments, may find the experience frustrating and unproductive.

Successful online facilitators are comfortable with dynamic environments, technology, and a lack of control, allowing students to control the direction of lessons, alter instructional strategies, and even modify content (Brooks & Brooks, 1993). Building a successful learning community takes a collaborative effort among individuals working in concert within the constraints of technological limitations and environmental factors.

Conclusion

The authors have discussed several strategies that can be applied to facilitate asynchronous distance learners:

- instilling ownership through individualized content, projects, and assessments;
- making meaningful connections through goal-based exploration of content;
- collaborating through learning communities;
- encouraging reflection through moderated discussions; and
- representing complex knowledge structures through concept mapping.

These strategies apply constructivist notions about knowledge building to computer-mediated asynchronous distance learning environments and operationalize the facilitator competencies and roles discussed. Though this is by no means an exhaustive account of strategies, roles, and competencies, it offers an alternative vision of distance learning - one that emphasizes the value of community, discourse, and meaningful interaction.

References

Althaus, S., (1997). Computer-mediated communication in the university classroom: An experiment with on-line discussion. Communication Education 46, 158-174.

Bailey, M.L. & Luetkehans, L., (1998). Ten great tips for facilitating virtual learning teams. Proceedings of the Annual Conference on Distance Teaching & Learning, USA, 14, 19-25.

Barab, S., & Duffy, T., (2000). From practice fields to communities of practice, in D.H. Jonassen & S. Land (Eds.), Theoretical Foundations of Learning Environments (pp. 1-26), Mahwah, N.J: Lawrence Erlbaum.

Berge, Z.L., (1995). Facilitating computer conferencing: Recommendations from the field. Educational Technology, 35(1), 22-30.

Berling, J.A., (1999). Student-centered collaborative learning as a liberating model of learning and teaching. Journal of Women and Religion, 17, 43-54.

Blumenfeld, P.C., Soloway, E., Marx, R.W., Krajcik, J.S., Guzdial, M., Palincsar, A., (1991). Motivating project-based learning: Sustaining the doing, supporting the learning. Educational Psychologist 26(3 & 4), 369-398.

Bonk, C.J., Malikowski, S., Angeli, C., & East, J., (1998). Web-based case conferencing for preservice teacher education: Electronic discourse from the field. Journal of Educational Computing Research 19(3), 269-306.

Brandt, D.S., (1997, October). Constructivism: Teaching for understanding of the Internet. Communications of the ACM, 40(10), 112-117.

Brookfield, S., (1985). Self-directed learning: From theory to practice. San Francisco: Jossey-Bass Publishers.

Brooks, J.G. & Brooks, M.G., (1993). In search of understanding: The case for constructivist classrooms. Alexandria, VA: Association for Supervision and Curriculum Development.

Cairncross, F., (1997), The Death of Distance, Boston, MA: Harvard Business School Press.

Choi, J., Hannafin, M., (1995). Situated cognition and learning environments: Roles, structures, and implications for design. Educational Technology Research & Development 43(2), 53-69.

Christensen, C.R., (1991). Chapter 2: Premises and practices of discussion teaching. In Christensen, C.R., Garvin, D.A., & Sweet, A.(Eds.), Education for judgment (pp. 15-34). Boston, MA: Harvard Business School Press.

Christensen, C.R., (1991). The discussion teacher in action: Questioning, listening, and response. In Christensen, C.R., Garvin, D.A., & Sweet, A.(Eds.), Education for judgment (pp. 153-172). Boston, MA: Harvard Business School Press.

Clifford, M.M., (1990). Students need challenge, not easy success. Educational Leadership, 48, 32-36.

Cobb, P., (1999). Individual and collective mathematical development: The case of statistical data analysis. Mathematical Thinking and Learning; 1(1), 5-43.

Cole, J.W. & Glass, J.C., (1977). The effect of adult student participation in program planning on achievement, retention and attitude. Adult Education 27(2), 75-88.

Cordova, D. I. & Lepper, M.R., (1996). Intrinsic motivation and the process of learning: Beneficial effects of contextualization, personalization, and choice. Journal of Educational Psychology, 88(4) 715-730.

DeBard, R. & Guidera, S., (1999). Adapting asynchronous communication to meet the seven principles of effective teaching. Journal of Educational Technology Systems 28(3), 219-230.

Foshay, W.R. & Moller L., (in press). Can instructional design deliver on the promise of the web? in G. Anglin (Ed.), Issues in Instructional Technology. Englewood, CO: Libraries Unlimited.

Grabowski, B.L., Koszalka, T.A., & McCarthy, M., (1998, March). Web-enhanced learning environment strategies handbook and reflection tool (11th ed.). Pennsylvania State University and NASA Dryden Flight Research Center.

Harris, R., (1999). Computer-conferencing issues in higher education. Innovations in education and training international 36(1), 80-91.

Hootstein, E.W., (1994, Spring). Enhancing student motivation: Make learning interesting and relevant. Education, 114(3), 475-479.

Jonassen, D., (1994, April). Thinking technology: Towards a constructivist design model. Educational Technology, 34-37.

Jonassen, D., Davidson, M., Collins, M., Campbell, J., & Haag, B.B., (1995). Constructivism and computer-mediated communication in distance education. The American Journal of Distance Education 9(2), 7-26.

Jonassen, D.H., Peck, K.L., & Wilson, B.G., (1999). Learning with technology: A constructivist perspective. Upper Saddle River, NJ: Merrill.

Knowles, M., (1975). Self-directed learning: A guide for learners and teachers. Englewood Cliffs, NJ: Cambridge Adult Education.

Land, S., & Hannafin, M., (2000). Student-centered learning environments, in D.H. Jonassen & S. Land (Eds.), Theoretical Foundations of Learning Environments (pp. 1-24). Mahwah, NJ: Lawrence Erlbaum.

Marshall, S., (1997). Creating sustainable learning communities for the twenty-first century, in F. Hesselbein, M. Goldsmith, & R. Beckhard (Eds.), The Organization of the Future (pp.177-188). San Francisco, CA: Jossey-Bass.

BEST COPY AVAILABLE

McIsaac, M. & Gunawardena, C., (1996). Distance Education. In D.H. Jonassen (Ed.) The Handbook of Research for Educational Communications and Technology, pp. 403-437. New York: McMillan.

Moller, L., (1998). Designing communities of learners for asynchronous learning environments. Educational Technology and Research Development Journal, 46(4), 115-122.

Moore, M.G. & Kearsley, G., (1996). Distance education: A systems view. Washington, D.C.: Wadsworth Publishing Company.

Navarro, P. & Shoemaker, J., (2000). Performance and perceptions of distance learners in cyberspace. The American Journal of Distance Education 14(2), 15-35.

Kember, D., Murphy, D., Siaw, I., & Yuen, K., (1991). Towards a causal model of student progress in distance education courses: Research in Hong Kong. American Journal of Distance Education, 5(2).

Kitchen, D. & McDougall, D., (1998). Collaborative learning on the Internet. Journal of Educational Technology Systems 27(3), 245-258.

Pine, G.J. & Others, (1980, May). Impact studies 1980. Journal of Reasearch Adaptation, 1.

Preskill, H. & Torres, R. T., (in press). The learning dimension of evaluation use. In V. Caracelli & H. Preskill (Eds.), Evaluation use, an evolving construct. New Directions for Evaluation, No. 88. San Francisco, CA: Jossey-Bass.

Romiszowski, A.L. & Ravitz, J., (1997). Computer mediated communication. In Dills C.R. & Romiszowski, A.J. (Eds.), Instructional Development Paradigms (pp. 745-764). Englewood Cliffs, NJ: Educational Technology Publications.

Sannomiya, M. & Kawaguchi, A., (1999). Cognitive characteristics of face-to-face and computer-mediated communication in group discussion: An examination from three dimensions. Educational Technology 22, 19-25.

Seifert, E.H., (1997, March). Learning centered schools using a problem-based approach. NASSP Bulletin, 81(587), 90-97.

Shank, R., (1994) Engines for education [On-line book]. Lawrence Erlbaum Associates. Available: http: www.ils.nwu.edu/~e_for_e (Accessed: 9/24/00).

Sisco, B., (1997). The individualized instruction model for adult learners. In Dills C.R. & Romiszowski, A.J. (Eds.), Instructional development paradigms (pp. 391-399). Englewood Cliffs, NJ: Educational Technology Publications.

Tishman, S., Perkins, D.N., & Jay, E., (1995). The thinking classroom: Learning and teaching in a culture of thinking. Needham Heights, MA: Ally and Bacon.

Vrasidas, C. & McIsaac, M.S., (1999). Factors influencing interaction in an online course. The American Journal of Distance Education 13(3), 22-36.

Vygotsky, L.S., (1978). In Cole, M., Scribner, S., & Souberman, E. (Eds.), Minds in society. Cambridge, MA: Harvard University Press.

Webster's Encyclopedic Unabridged Dictionary, (1997). New York, NY: Portland House.

BEST COPY AVAILABLE

U.S. Department of Education
Office of Educatonal Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

REPRODUCTION RELEASE
(Specific Document)

NOTICE

REPRODUCTION BASIS

☒ This document is covered by a signed "Reproduction Release (Blanket) form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.

☐ This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").